HIGH SCHOOL AND UNIVERSITY
MATRICULATION EXAMINATIONS BOARD.

PROMOTION TESTS, 1936.

ALGEBRA 1.

Time—$2\frac{1}{2}$ hours.

Note—Sufficient work must be shown to indicate method of solution for all questions.

Graph paper will be supplied by the presiding examiner.

Values

7 **1.** Copy the following and perform the indicated operations:

Add:

(a) $+3a$
$-8a$

(b) $-16ab$
$-6ab$

(c) $-5a$
$+6a$

(d) $3a^2 + 12a - 3$
$4a^2 - 5a + 8$

Subtract:

(e) $-5ab$
$-9ab$

(f) $+6xy$
$-3xy$

(g) $-7a^2$
$+2a^2$

(h) $-12 - 3x^2$
$-8 + 4x^2$

Multiply:

(i) $(-2)(-3)(+a)$

(j) $(-b)(+c)$

(k) $2m(-m)(+n)$

(l) $(-2a)(-2b)(-2c)(-2d)$

Divide:

(m) $(+6a) \div (-3a)$,

(n) $(-30xy) \div (\frac{1}{2}xy)$

Values

1 **2.** (*a*) What are the simplest factors of $5a(3a+b)(a+b)$?

1 (*b*) How many inches are there in x ft. y in.?

1 (*c*) Find the cost of 40 articles at C cents a dozen.

1 (*d*) Find in square inches the area of a rectangle whose length is x feet and whose width is y inches.

1 (*e*) If velocities of y feet per minute and x miles per hour are the same, what is the relation between x and y?

2 (*f*) A line 10 inches in length is divided into 2 parts. One part is x times as long as the other. What is the length of each part?

1 (*g*) The radius of a wheel is R inches. How often would the wheel revolve in going D miles?

1 (*h*) The volume of a cube is y^3 cubic inches. What is the length of each edge?

1 (*i*) 2 is what per cent of $50x$?

2 (*j*) N men can do a job in H hours. At the same rate, how long would it take y men to do the same job?

2 (*k*) Fill in the blanks:

$$\frac{3}{a} = \frac{\quad}{ab}; \quad \frac{a+2}{3} = \frac{\quad}{12}; \quad \frac{a}{4} = \frac{\quad}{x}$$

3. The following table gives the temperatures as recorded at various times during a day:

Time	4:30 a.m.	6 a.m.	7:30 a.m.	9 a.m.	10:30 a.m.	12 noon	1:30 p.m.	3 p.m.
Temperature (degrees Fahrenheit)	—6	+0.5	+4.5	+9.0	+4.5	0	—2.5	—8

10 (*a*) Represent the given facts graphically.

3 (*b*) Find from the graph the probable temperature at 11:30 a.m.

2 (*c*) At what time was the temperature probably changing most rapidly?

4. Perform the indicated operations:

4 (*a*) $(12a^3) \div (-\frac{1}{2}a^2)$. Check, using $a = 2$.

4 (*b*) $(-10x^2y^3) \div (-2xy)$. Check, using $x = 3$, $y = 2$.

4 (*c*) $(a^3 - 5a^2 - 2)(a^2 + a - 1)$. Check, using $a = 2$.

Values

5. Solve, including verification:

6 (*a*) $5x - 3 - (x - 4) - (x - 2) = 27$

6 (*b*) $\frac{x-3}{4} = \frac{2x-4}{5} + \frac{3x-5}{8}$

6. Find the simplest factors of *four* of the following:

4 (*a*) $x^2 - (y - z)^2$

4 (*b*) $(x - 2)^3 + 8$

4 (*c*) $3x^2 - 22x - 16$

4 (*d*) $4x^4y^2 - 64$

4 (*e*) $x(b - c) - 2by + 2cy$

7. Attempt *two* parts only:

12 (*a*) The length of a garden plot is 24 feet more than twice its width. The perimeter of the plot is 210 feet. Find the length and the width of the plot.

12 (*b*) A man pays a tax at a rate equal to 4% on all his income in excess of \$1000. If he pays \$48 tax, what is his income?

12 (*c*) An aeroplane made a trip of 600 miles in 6 hours. Part of the distance it averaged 120 miles an hour, and then ran into a storm which diminished its speed by $\frac{1}{3}$ for the remainder of the distance. Find the distance travelled at each rate.

100